

REMARKS

Claims 11-16, 18-21, 30, 31, and 58-67 are pending in this application. Claims 11, 30, 31, 61, and 62 have been amended, and new claims 72-75 have been added. Claims 1-10, 17, 22, 24, 26, 27, 29, 32-57 and 68-71 were previously canceled, without prejudice. Claims 23, 25, and 28 have been withdrawn. Applicant reserves the right to pursue the original claims and other claims in this and other applications. In view of the amendments to the claims and the remarks below, Applicant respectfully requests that the rejections be withdrawn and the claims allowed.

Claims 11-12, 14-15, 18, 20-21, 30-31, 58-64, and 66-67 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 7,132,724 to Merrill ("Merrill") in view of U.S. Patent No. 6,960,799 to Descure ("Descure"), and further in view of U.S. Publication No. 2002/0058353 to Merrill ("Merrill II"). Reconsideration is respectfully requested.

Claim 11 has been amended to recite structural features that distinguish the claimed pixel array from those disclosed in the cited references. Specifically, claim 11 now recites that the second photosensor is "entirely laterally adjacent" the first photosensor "such that the second photosensor is not overlapping the first photosensor in a vertical direction." Similarly, the third photosensor is "entirely laterally adjacent" the first or second photosensors. This feature is illustrated, for example, in FIGS. 3-5 and 11 (pixels 12, 14, 16 and region 802). Additionally, the claim has been amended to recite that "the layers of polysilicon or epitaxial silicon over the first photosensor and the layers of polysilicon or epitaxial silicon over the second photosensor are above the surface of the substrate." This feature is illustrated, for example, in FIGS. 3-5 and 7-9. The cited references do not teach or suggest the specific structure of the claim 11 pixel array.

The Office Action admits that none of the three references includes the structure recited by claim 11, and relies on a combination of the three references as teaching the claimed structure. Applicant respectfully submits, however, that the claim 11 structure would not be obvious in light of these three references, especially considering the above-described amendments to the claims.

The Office Action (at page 3) suggests that Merrill includes photosensors 68 and 78 that are laterally adjacent one another (as in FIG. 7), instead of relying on Descure to teach laterally adjacent photosensors (as in the prior rejection). While the Merrill photosensors 68 and 78 have portions that are arguably laterally adjacent one another, they are not “entirely adjacent . . . such that the second photosensor is not overlapping the first photosensor in a vertical direction,” as required by the amended claims.

Accordingly, Merrill does not teach the photosensors of amended claim 11, which are entirely laterally adjacent one another. While Descure does include entirely laterally adjacent photosensors, there would be no motivation to modify Merrill to include such photosensors, for the same reasons discussed in the Amendment filed April 16, 2010. Merrill includes doped regions vertically stacked over one another, and this is a necessary feature for the functionality of the filter array. There would be no apparent reason to modify Merrill to include entirely adjacent pixels, and in fact this would fundamentally alter the functionality of the device.

Similarly, there would be no apparent reason to modify Merrill to include layers of silicon above the surface of the substrate. Merrill functions by using different depths below the substrate, and by placing the photosensors below fields that will absorb portion of the light. The Merrill reference is dependent on vertically stacked photosensitive regions at different layers below the surface of a substrate.

Merrill and Merrill II utilize fundamentally different structures that that described by claim 11, placing photosensitive regions vertically below a substrate. While Descure does teach adjacent photosensors, there would be no reason that these teachings would be applied to the Merrill and Merrill II devices, even if there was a way that this could be done without destroying the functionality of the devices in those references. For at least these reasons, the cited references do not teach or suggest the claim 11 structure. Claims 12, 14-15, 18, 20-21, 30-31, 58-64, and 66-67 depend from claim 11 or recite similar limitations and are allowable for at least the same reasons. The rejection should be withdrawn and the claims allowed.

Claims 13 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Merrill in view of Descure, and in further view of Merrill II, and further in view of U.S. Patent No. 6,815,743 to Rhodes ("Rhodes"). This rejection is respectfully traversed.

As discussed above, one skilled in the art would not be motivated to combine Merrill, Descure and Merrill II as suggested in the Office Action. Rhodes is cited for teaching a photosensor as a photogate, photodiode, photoconductor or other photosensitive elements (Office Action at 14) and does not supplement the deficiencies of Merrill, Descure and Merrill II. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 16 and 65 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Merrill in view of Descure, and in further view of Merrill II, and further in view of U.S. Patent No. 6,093,585 to Randazzo ("Randazzo"). This rejection is respectfully traversed.

As discussed above, one skilled in the art would not be motivated to combine Merrill, Descure and Merrill II as suggested in the Office Action. Randazzo is cited for teaching that a layer of TEOS can be formed over a polysilicon layer (Office Action at 15) and does not supplement the deficiencies of Merrill, Descure and Merrill II. For at least these reasons, withdrawal of this rejection is respectfully requested.

New claim 72 recites, among other things, "a first, second, and third pixel group each comprising a plurality of pixels, each pixel having a single photosensor and arranged so that the photosensors of respective pixels are entirely laterally adjacent each other such that no portion of the photosensors are overlapping another photosensor in a vertical direction, and each photosensor in a pixel group being arranged to receive light of a different wavelength from photosensors in another pixel group . . . a first filter having one or more layers of polysilicon or epitaxial silicon over [a] first photosensor and above and in contact with the substrate . . . and a second filter having one or more layers of polysilicon or epitaxial silicon over the second photosensor and above and in contact with the substrate." Accordingly, claim 72 is allowable for similar reasons that claim 11 is

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allowable, and for other reasons. Claims 73-75 depend from claim 72 and are allowable for at least the same reasons that claim 72 is allowable.

In view of the above, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By 

Thomas J. D'Amico

Registration No.: 28,371

Jonathan L. Falkler

Registration No.: 62,115

DICKSTEIN SHAPIRO LLP

1825 Eye Street, NW

Washington, DC 20006-5403

(202) 420-2200

Attorneys for Applicant